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A METHOD, SYSTEM, AND STORAGE MEDIUM FOR PROVIDING COMPREHENSIVE FACSIMILE INFORMATION WITHIN A VOICEMAIL SYSTEM

Inventors:

KAREN S. MULLIS
ANITA HOGANS SIMPSON

Marisa J. Dubuc
CANTOR COLBURN LLP
55 Griffin Road South
Bloomfield, CT 06002
Phone No. (860) 286-2929

Attorney Reference No.: BLL-0132
BellSouth Number: 030463

METHOD, SYSTEM, AND STORAGE MEDIUM FOR PROVIDING COMPREHENSIVE FACSIMILE INFORMATION WITHIN A VOICEMAIL SYSTEM

BACKGROUND OF INVENTION

[0001] Embodiments of the invention relate generally to telecommunications and, more particularly, to a method, system, and storage medium for providing comprehensive facsimile information within a voicemail system.

[0002] Voicemail systems currently provide the ability to allow system users to receive facsimile transmissions in addition to voicemail messages. A sender of the facsimile enters the voicemail subscriber's general telephone number, whereby the incoming call is forwarded to the subscriber's voicemail using standard call forwarding services such as 'busy', 'no answer,' and 'unconditional.' Alternatively, the sender may be given a direct number to reach the voice mailbox without relying on call forwarding. In either case, the facsimile is stored at the voicemail platform and then associated with the subscriber's voice mailbox. When the subscriber checks the voice mailbox for new messages, he/she is notified that a facsimile has arrived. The notification includes limited information such as the date, time, and sometimes the number of pages in the facsimile. For various reasons, the subscriber oftentimes desires more specific information about the facsimile before making a determination of when or if the message will be accepted.

[0003] Accordingly, it would be desirable to provide a facsimile recipient with sufficient information about an incoming facsimile, within the context of a voicemail system, without requiring that the recipient first open or print the facsimile.

SUMMARY OF INVENTION

[0004] The foregoing discussed drawbacks and deficiencies of the prior art are overcome or alleviated by a method, system, and storage medium for providing comprehensive facsimile information within a voicemail system.

[0005] Exemplary embodiments of the invention relate to a method, system, and storage medium for providing comprehensive facsimile information within a voicemail system. The method includes receiving and storing a facsimile at a voicemail system. The method also includes interpreting elements of a facsimile using optical character recognition software. Upon receiving a request by a voicemail recipient to access a voice mailbox, the method includes converting interpreted elements of the facsimile into audible speech via a text-to-speech engine, formatting the converted elements resulting in a voicemail facsimile notification, and presenting the voicemail facsimile notification to a communications device associated with the voicemail recipient.

[0006] Embodiments of the system include a communications network system for providing comprehensive facsimile information within a voicemail system. The system includes a distributed network system including a server, a printer, a telephone, and a computer. The server executes a voicemail system and stores at least one voice mailbox. The system also includes a comprehensive voicemail tool executing on the server. The comprehensive voicemail tool includes an optical character recognition device and a text-to-speech engine. The system further includes a link to a facsimile sending device and a link to a remote facsimile recipient device. Also included is a facsimile received at the voicemail system by the facsimile sending device. The comprehensive voicemail tool stores the facsimile at the voicemail system. The comprehensive voicemail tool interprets elements of a facsimile using an optical character recognition device. Upon receiving a request by a voicemail recipient to access the voice mailbox, the comprehensive voicemail tool converts the interpreted elements of the facsimile into audible speech via a text-to-speech engine, formats the converted elements resulting in a voicemail facsimile notification, and presents the voicemail facsimile notification to the recipient device.

[0007] Other systems, methods, and/or computer program products according to embodiments will be or become apparent to one with skill in the art upon review of the following drawings and detailed description. It is intended that all such additional systems, methods, and/or computer program products be included within this

description, be within the scope of the present invention, and be protected by the accompanying claims.

BRIEF DESCRIPTION OF DRAWINGS

[0008] Referring to the exemplary drawings wherein like elements are numbered alike in the several FIGURES:

[0009] FIG. 1 is a block diagram of a system upon which the comprehensive voicemail tool is implemented in accordance exemplary embodiments of the invention;

[0010] FIG. 2 is a flowchart describing a process of implementing the comprehensive voicemail tool in accordance with exemplary embodiments of the invention;

[0011] FIG. 3 is a sample facsimile cover page processed by the comprehensive voicemail tool in accordance with exemplary embodiments of the invention; and

[0012] FIG. 4 illustrates a sample facsimile conversion script generated by the comprehensive voicemail tool in accordance with exemplary embodiments of the invention.

DETAILED DESCRIPTION

[0013] Disclosed herein is a method, system, and storage medium for providing comprehensive facsimile information within a voicemail system. By allowing a facsimile recipient to acquire detailed information about an incoming facsimile without first opening or printing the facsimile, the recipient can make informed decisions about which facsimiles require immediate attention, which facsimiles may be stored for later retrieval, and those that are unsolicited, misdirected, and/or otherwise undesirable. Incoming facsimiles are received into a voicemail system via traditional facsimile machines, from facsimile-enabled computer devices, or similar systems. The comprehensive voicemail tool receives the incoming

facsimile, reads the facsimile information using optical character recognition technology, and converts the information into speech using a text-to-speech engine. The information is presented to the facsimile recipient upon accessing the voice mailbox who may perform one of several actions based upon the nature of the information presented, such as print the entire facsimile, store the facsimile, or delete the facsimile from the voicemail system. By providing this detail, the recipient is able to better control and track the number and types of facsimiles that are stored in the voice mailbox as well organize and prioritize the actions that may be required to be taken by the recipient as a result of the facsimiles received.

[0014] Forms of communication devices that may be serviced by the comprehensive voicemail tool include computers, wireline telephones, mobile devices such as personal digital assistants (PDAs), facsimiles, and wireless telephones with computer-enhanced capabilities. The comprehensive voicemail tool may be implemented on various types of existing communications network systems such as public switched telephone networks (PSTN), wireless, SMS, MMS, IP, WiFi, LAN, WAN, broadcast, video, radio, VoIP, etc.

[0015] Referring initially to FIG. 1, there is shown a block diagram of a network system for implementing the comprehensive voicemail tool. Network system 100 includes one or more sending devices 102 in communication with one or more of recipient devices 108 and a distributed network 106 via a network connection. Distributed network may include a local area network (LAN), a wide area network (WAN), a metropolitan area network (MAN), a virtual private network (VPN), or other suitable network.

[0016] Sending devices 102 include a facsimile machine 110 and a computer client 112. Remote recipient devices 108 include a wireless telephone 116, a computer client 118, a wireline telephone 120, a facsimile machine 126 and a printer 128. Distributed network 106 includes a server 122 in communication with optical character recognition (OCR) software 134 and a text-to-speech (TTS) engine 136 via a network link 124.

[0017] Computer clients 112 and 118 may include general-purpose desktop computers, laptop computers, or similar devices. Computer clients 112 and 118 are in communication with other entities of network system 100 via a network connection such as the Internet or other suitable means of networking architecture.

[0018] Facsimile machines 110 and 126 each comprise an optical scanner for digitizing images on paper, a printer for printing incoming fax messages, and a telephone for making the connection.

[0019] Telephone 120 represents a conventional wireline telephone that is connected to a public switched telephone network (PSTN) via the caller's voice lines.

[0020] Wireless telephone 116 represents a mobile calling device that utilizes mobile technology such as Code-Division Multiple Access (CDMA), GSM, or other digital cellular technology for allowing individuals to wirelessly communicate with other wireless and/or wireline communication devices.

[0021] Printer 128 represents a standard printing device that receives commands to print documents, facsimiles, etc. utilizing conventional print technology such as dot-matrix, ink-jet, laser, LCD/LED, or line printing.

[0022] Server 122 comprises a high-powered multiprocessor computer device including web server and applications server software, and a voicemail system. The voicemail system may include Computer Telephony Integration capabilities (CTI), and Unified Messaging (e.g., voice, fax and e-mail integrated into one inbox). Server 122 includes an internal storage unit for storing documents, data, email, voicemail, applications, etc., for its client systems. In alternative embodiments, storage units may be separate devices that are logically addressable from server 122 and may, in fact, be geographically dispersed from server 122.

[0023] Server 122 further executes OCR software 134 that is utilized by the comprehensive voicemail tool. An optical scanner is included along with OCR

software 134 for reading text and for analyzing images. OCR software 134 is equipped to recognize various character types and fonts.

[0024] Text-to-speech (TTS) engine 136 converts text read by OCR software 134 to audible speech. Although not necessary to realize the advantages of the invention, preferred embodiments utilizes Digital Signal and Logical Inference Processor technology, which provides high quality TTS synthesis.

[0025] The comprehensive voicemail tool may be incorporated into an existing voicemail application or similar commercially-available product as an enhancement feature or may be provided via a third party application service provider (ASP) or e-utilities broker where service is provided for a per-use fee.

[0026] FIG. 2 is a flowchart describing the process of implementing the comprehensive voicemail tool in exemplary embodiments of the invention. The comprehensive voicemail tool receives a facsimile message from one of sending devices 102 at step 202. The facsimile is stored on the voicemail system that is resident on server 122 at step 204. The comprehensive voicemail tool reads the facsimile utilizing OCR software 134 at step 206. A sample facsimile cover page 300 including header information 302 is depicted in FIG. 3. The comprehensive voicemail tool possesses the intelligence to recognize and differentiate the elements within a facsimile irrespective of the order or placement of these elements on the facsimile. For example, using the sample facsimile 300 of FIG. 3, the comprehensive voicemail tool recognizes that header information 302 '6/12/03' is a date and that 'ABC Company' is the sender of the facsimile. Accordingly, if a first facsimile machine prints header information in a different sequence than a second facsimile machine, the comprehensive voicemail system is able to recognize the data elements of each machine and adapt to these varying formats.

[0027] At step 208, the recipient of the facsimile logs onto the voicemail system on server 122 via one of remote recipient devices 116-120. The elements of header information 302 and other portions of the facsimile read in step 206 are

converted to speech via text-to-speech engine 136. This step includes associating pre-established scripted material with the converted information. When the recipient device user accesses the voicemail system, the converted information and scripted material are presented to the recipient device in the form of a facsimile notification at step 212. A visual display of a sample scripted facsimile notification is shown in FIG. 4. As indicated in FIG. 4, elements 402 taken from header 302, as well as other portions of the facsimile, may be added to a pre-defined script and presented in audio form to the facsimile recipient. The pre-defined script may be devised in a way that presents the converted information in plain language form.

[0028] Armed with this detailed information about the facsimile, the recipient is able to make a determination of what action will be taken with respect to the facsimile. Embodiments of the invention may include options 404 that are presented in audio form and which instruct the facsimile recipient with information about how to handle the facsimile. As shown in FIG. 4, the recipient may print, save, delete, or forward the facsimile (e.g., the recipient forwards the facsimile to a networked fax-capable voice mailbox).

[0029] If the recipient decides to print the facsimile at step 214, the voicemail system sends the facsimile to a printer such as printer 128 at step 216. This may be accomplished by providing the voicemail system with a telephone number (e.g., local, long distance, international) for which printer 128 is addressable. Alternatively, the recipient may decide to take no further action at the moment at step 218, in which case, the facsimile remains stored in the voicemail system of server 122. Or, the recipient may forward the facsimile to a networked voice mailbox at step 219. Otherwise, if the recipient has no present or future interest in the facsimile, he/she may delete the facsimile from the voicemail system at step 220.

[0030] As will be appreciated from the above description, the restrictions and limitations that exist with voicemail and facsimile systems are efficiently overcome. By allowing a facsimile recipient to acquire detailed information about an incoming facsimile without first opening or printing the facsimile, the recipient can make

informed decisions about which facsimiles require immediate attention, which facsimiles may be stored for later retrieval, and those that are unsolicited, misdirected, and/or otherwise undesirable.

[0031] As described above, embodiments may be in the form of computer-implemented processes and apparatuses for practicing those processes. In exemplary embodiments, the invention is embodied in computer program code executed by one or more network elements. Embodiments include computer program code containing instructions embodied in tangible media, such as floppy diskettes, CD-ROMs, hard drives, or any other computer-readable storage medium, wherein, when the computer program code is loaded into and executed by a computer, the computer becomes an apparatus for practicing the invention. Embodiments include computer program code, for example, whether stored in a storage medium, loaded into and/or executed by a computer, or transmitted over some transmission medium, such as over electrical wiring or cabling, through fiber optics, or via electromagnetic radiation, wherein, when the computer program code is loaded into and executed by a computer, the computer becomes an apparatus for practicing the invention. When implemented on a general-purpose microprocessor, the computer program code segments configure the microprocessor to create specific logic circuits.

[0032] While the invention has been described with reference to exemplary embodiments, it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the scope of the invention. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention without departing from the essential scope thereof. Therefore, it is intended that the invention not be limited to the particular embodiments disclosed for carrying out this invention, but that the invention will include all embodiments falling within the scope of the claims.